

WHAT IS CLAIMED IS:

1. A semiconductor device, comprising:
 - a first copper layer;
 - an insulating layer formed on said first copper layer and having a via reaching said first copper layer;
 - 5 a second copper layer electrically connected to said first copper layer through said via; and
 - a barrier layer located between said second copper layer and said insulating layer, and between said first copper layer and said second copper layer, said barrier layer having a structure with a tantalum nitride layer
 - 10 sandwiched by layers having a better adhesive property to copper than said tantalum nitride layer.
2. The semiconductor device according to claim 1, wherein said barrier layer has a multi-layer structure with said tantalum nitride layer sandwiched by tantalum layers.
3. A semiconductor device, comprising:
 - a first copper layer;
 - an insulating layer formed on said first copper layer and having a via reaching said first copper layer; and
 - 5 a second copper layer electrically connected to said first copper layer through said via, at least either one of said first and second copper layers containing an inert element.
4. The semiconductor device according to claim 3, wherein said inert element is argon.
5. A semiconductor device, comprising:
 - a first copper layer;
 - an insulating layer formed on said first copper layer and having a via reaching said first copper layer; and

5 a second copper layer electrically connected to said first copper layer through said via, at least either one of said first and second copper layers containing an element in group 8 of a periodic table.